IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW MEXICO

DENNY RAMIREZ, Individually and as Administrator of the Estate of Luke D. Ramirez, Laura Delmege, Individually, and as the Mother and Next Friend of Nicholas D. Ramirez, a Minor,	
Plaintiffs,	**Cause No. CIV 00-331 JP/KBM**
vs.	
ISUZU MOTORS LIMITED and SUBARU-ISUZU AUTOMOTIVE INC.,	
Defendants.	

DEFENDANTS' PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW RE: DEFENDANTS' *DAUBERT* MOTIONS TO EXCLUDE OPINIONS OF DR. ANDRZEJ NALECZ AND DR. MICHAEL KAPLAN, DEFENDANTS' MOTION FOR SUMMARY JUDGMENT AND SIA'S MOTION FOR PARTIAL SUMMARY JUDGMENT

ISUZU MOTORS LIMITED and SUBARU-ISUZU AUTOMOTIVE INC. ("Defendants") respectfully submit the following proposed findings of fact and conclusions of law:

Jurisdiction and Venue

1. The parties have stipulated that this Court has jurisdiction over the subject matter of this action by reason of the diversity of the parties' citizenship and the amount in controversy. *Stipulated Pretrial Order,* § IV.A.1.

2. The parties have stipulated that venue is proper in this district and division. *Id.*, §IV.A.2.

Background

3. This action arises out of a single vehicle crash involving a 1997 Isuzu Rodeo

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that was designed, tested and manufactured by Isuzu Motors Limited and assembled by Subaru-Isuzu Automotive Inc. *Id.*, §§ IV.A.3, 4, 10 & 11.

4. Although the parties disagree concerning the identity of the Rodeo's driver and many other particulars of the crash, they do agree on some essentials. They agree that the Rodeo was being driven East on Interstate 10 in Hidalgo County, New Mexico, at about 80 m.p.h. when the driver allowed the left wheels of the Rodeo to go off the pavement and into the median. *Id.*, §§ III & IV.A. They further agree that the driver brought the Rodeo back onto the road, leaving marks on the pavement as shown in the police accident report. *Defendants' Exhibit 1.* They also agree that the Rodeo was put into a counterclockwise yaw or spin heading back toward the median, leaving marks as shown in the police accident report. *Id.* They also agree that the Rodeo slid toward the median and was flipped over, passenger side leading. *Id.* Defendants contend that the Rodeo was tripped by the soft soil of the median. *Stipulated Pretrial Order*, §§ III & IV.A. Plaintiffs contend that the rollover was initiated on the pavement. *Id.* The parties agree that the Rodeo was flipped three-and three-quarters times and came to rest on the oncoming pavement on its driver's side. The parties also agree that Luke Ramirez died as a result of the crash and that Mr. Ramirez, Ms. Delmege and Nicholas Ramirez received various injuries. *Id.*, §§ III & IV.A.

5. Plaintiffs are proceeding under two causes of action: strict products liability and negligence. *Plaintiffs' Complaint*, pp. 9-13.

6. Plaintiffs contend that the Rodeo had a design defect in that it lacked adequate

rollover resistance. They also contend that the Rodeo had a marketing defect in that Defendants failed to give adequate warning of the vehicle's lack of adequate rollover protection. *Stipulated Pretrial Order,* § IV.B.1.a-d.

7. Plaintiffs have two liability experts, Andrzej Nalecz and Michael Kaplan. Defendants have moved the Court to exclude the opinions of both Dr. Nalecz and Dr. Kaplan and to exclude Dr. Kaplan as an expert, all under Fed. R. Evid. 702 and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) and related cases.

8. Defendants have also moved for summary judgment, arguing that Plaintiffs cannot meet their burdens under either of their theories without the testimony of a liability expert. Plaintiffs have opposed this motion only on the grounds that their experts should not be excluded. They do not disagree with the proposition that they cannot carry their burdens if their experts are excluded. *Defendants' Motion for Summary Judgment*, p. 2, ¶ 7; *Plaintiffs' Opposition to Defendants' Motion for Summary Judgment,* p. 2, ¶ 5.

9. Subaru-Isuzu Automotive Inc. has also moved for partial summary judgment on Plaintiffs' negligence claim on the ground that Plaintiffs do not contend that there was negligence in assembly, SIA's sole function with respect to the 1997 Rodeo. *See, Subaru-Isuzu Automotive Inc.'s Motion for Partial Summary Judgment.*

Legal Standards

10. Federal Rule of Evidence 702 allows a party to present scientific testimony through a qualified expert where such evidence "will assist the trier of fact to understand the evidence or to determine a fact in issue." Under *Daubert*, trial courts must mind the gates of evidence and bar expert testimony that does not meet threshold

requirements. When performing this gatekeeping function, trial courts must

> ensure that scientific testimony is both reliable and relevant. This role requires the district judge to undertake a two-part analysis. The district judge must first determine whether the proffered testimony is reliable, requiring an assessment of whether the reasoning or methodology underlying the testimony is scientifically valid. Second, the district judge must determine whether that reasoning or methodology can be properly applied to the facts in issue; that is, whether it is relevant.

Curtis v. M & S Petroleum, 174 F. 3d 661, 668 (5th Cir. 1999).

11. As the Tenth Circuit has noted,

> the subject of the expert's testimony must be based on scientific knowledge. Scientific knowledge, the court explained "implies a grounding in the methods and procedures of science" which must be based on actual knowledge and not "subjective belief or unsupported speculation." *Id.* In other words, "an inference or assertion must be derived by the scientific method ... [and] must be supported by appropriate validation—i.e. 'good grounds,' based on what is known.'"

Mitchell v. Gencorp Inc., 165 F. 3d 778, 780 (10th Cir. 1999)(citations omitted).

12. A trial court faced with a *Daubert* motion must consider all factors necessary and appropriate to determine whether the challenged expert evidence passes muster. Among the more general factors the Tenth Circuit has identified are:

a. Whether the expert's theory is susceptible to testing and whether it has been subjected to such testing;

b. Whether the expert's theory has been subjected to peer review and withstood scrutiny;

c. What the known or potential rate of error associated with the theory is;

d. Whether there exist any standards governing the operation of the expert's technique;

e. The extent (if any) to which the expert's theory or methods has been accepted in the scientific community.

Mitchell, 165 F.3d at 780.

13. This inquiry is required even if the expert himself has impeccable credentials. Good experts do not get a "pass" to advance bad theory. "Under the regime of Daubert ... a district judge asked to admit scientific evidence must determine whether the evidence is genuinely scientific, as distinct from being unscientific speculation offered by a genuine scientist." *Id.* at 783, *quoting Rosen v. Ciba-Geigy Corp.,* 78 F.3d 316, 318 (7th Cir.1996).

14. Even if the opinion is valid, it must still be tied to the facts of the case at hand. "The [Supreme] Court described this aspect of the district court's inquiry as one of 'fit.' 'Fit' is not always obvious, and scientific validity for one purpose is not necessarily scientific validity for other, unrelated purposes.'" *Id.* at 781, quoting *Daubert,* 509 U.S. at 591.

15. The mere fact that an expert "believes" in what he says, or that his "experience" tells him something is true does not make it admissible. "Nothing ... requires a district court to admit opinion evidence which is connected to existing data only by the *ipse dixit* of the expert." *General Electric. Co. v. Joiner,* 522 U.S. 136, 146 (1997).

16. "An expert's bald assurance of validity is not enough. Rather, the party presenting the expert must show that the expert's findings are based on sound science, and this will require some objective, independent validation of the expert's

methodology." *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 43 F.3d 1312, 1315 (9th Cir. 1995)(on remand)("*Daubert II*").

17. "Under Daubert, 'any step that renders the analysis unreliable ... renders the expert's testimony inadmissible. This is true whether the step completely changes a reliable methodology or merely misapplies that methodology.'" *Mitchell,* 165 F. 3d at 782, *quoting In re Paoli R.R. Yard PCB Litigation,* 35 F.3d 717, 745 (3d Cir.1994).

18. "Tests" and methods created and used only for litigation are inherently suspect.

> One very significant fact to be considered is whether the experts are proposing to testify about matters growing naturally and directly out of research they have conducted independent of the litigation, or whether they have developed their opinions expressly for purposes of testifying. That an expert testifies for money does not necessarily cast doubt on the reliability of his testimony, as few experts appear in court merely as an eleemosynary gesture. But in determining whether proposed expert testimony amounts to good science, we may not ignore the fact that a scientist's normal workplace is the lab or the field, not the courtroom or the lawyer's office.

Daubert II, 43 F.3d at 1316-17.

Dr. Andrzej Nalecz and His Opinions

19. Dr. Nalecz is a former professor from the University of Missouri-Columbia. He holds undergraduate and advanced degrees in mechanical engineering and has had specialized training in vehicle dynamics. *Defendants' Exhibit D25*, p. 1.

20. Defendants do not challenge Dr. Nalecz's qualifications to testify as an expert in the fields of mechanical engineering and vehicle dynamics. Rather, they challenge the admissibility of the opinions he intends to express pursuant to Fed. R. Evid.

702.

21. Dr. Nalecz has used the police accident report, his observations from his inspection of the scene and the vehicle, and conversations with the investigating officer, Robert Nelson, to plot what he believes to have been the path of the vehicle from the point at which the driver first exited the road until the point at which the vehicle came to rest. *Defendants' Exhibit D25.*

22. Dr. Nalecz has also used a computer program, ADVS, to do the following:

a. He has created a mathematical model of a 1997 Rodeo that he claims to faithfully duplicate the real vehicle. *Id.*, pp. 3-4.

b. He has created a mathematical model of the scene of the crash, including the pavement and the median, that he claims to faithfully duplicate the real scene. *Id.*, p. 3.

c. He has used his 1997 Rodeo model, his scene model and the path reconstruction mentioned above to arrive at opinions concerning what the driver did with the steering wheel, the accelerator pedal and the brake pedal to make the Rodeo follow the reconstructed path. *Id.*, p. 4. He has formed the opinion that the resulting steering, accelerator and braking inputs were "very reasonable and appropriate." *Id.*

d. He has created a mathematical model of a "modified 1997 Rodeo," thus "redesigning" the Rodeo . He has then put that model on the same terrain. He did not apply the same steering and braking inputs on the "modified" Rodeo. Rather, he used another set of steering and braking inputs so that

ADVS would cause the center of gravity of his "modified" Rodeo model to follow the same path as the center of gravity of his 1997 Rodeo model. Although the centers of gravity move along approximately the same paths, the 1997 Rodeo model entered the median sliding sideways and the "modified" Rodeo model entered the median going approximately straight. Thus, the "modified" Rodeo model did not tip up in Dr. Nalecz's ADVS simulation. *Id.*, p. 5. From this, he formed the opinion that Isuzu could have redesigned the 1997 Rodeo so that it would not have rolled over had it existed and had the Ramirez family been driving it on the day of this crash. *Id.*

e. He has created a mathematical model of a 1996 Toyota 4Runner that he claims to faithfully duplicate that vehicle. *Id.*, p.p. 5-6. He has then put that model on the same terrain. He did not apply the same steering inputs on the 1996 4Runner model that he applied to the 1997 Rodeo model. *Id.* Rather, he used another set of steering and braking inputs so that ADVS would cause the center of gravity of his 1996 4Runner model to follow the same path as the center of gravity of his 1997 Rodeo model. *Id.* Although the centers of gravity move along approximately the same paths, the 1997 Rodeo model entered the median sliding sideways and the 1996 4Runner model entered the median going approximately straight. *Defendants' Exhibit D26.* Thus, the 1996 4Runner model did not tip up in Dr. Nalecz's ADVS simulation. *Defendants' Exhibit D25,* p. 5. From this, he formed

the opinion that there was at least one other vehicle on the market that the Ramirez family could have been in that would not have rolled over had they been in it on the day of this crash. *Id.*

23. Thus, Dr. Nalecz is using ADVS to:

a. determine precisely what a driver did with the steering wheel, accelerator pedal and brake pedal to cause a particular vehicle to follow a particular path on a particular day in a particular place;

b. compare the performance of his model of a 1997 Rodeo to a "redesigned" 1997 Rodeo model and a model of a 1996 4Runner; and

c. draw conclusions therefrom concerning the safety and performance of real vehicles.

Dr. Nalecz's ADVS Program

24. The version of ADVS that Dr. Nalecz used to do the work described in the preceding paragraphs is an adaptation or modification of the original ADVS program that Dr. Nalecz and others developed at the University of Missouri-Columbia ("UMC"). Both the original program and the version used in this case were, according to Dr. Nalecz, "prepared primarily" under a contract between UMC and the National Highway Traffic Safety Administration ("NHTSA"). *Id.*, p. 8, ¶ 19 & p. 9, ¶ 22.

25. The goal of the research was to devise a program that could be used to distinguish the performance of different vehicles in flat road handling and when confronted with a tripping mechanism such as a curb or soft soil. UMC's research was one of several such programs being funded by NHTSA for this purpose. *Defendants'*

Exhibit D5, p. ix.

26. For purposes of this discussion, there are generally two types of computer simulation programs: (1) those that employ a preconfigured vehicle and suspension type, which the user is forced to "adapt" to get it to perform like a real vehicle and (2) those that allow a user to build individual components exactly as they exist in the real world and to connect them together so they work together exactly as they do in the real world. The latter type of program is called a multi-body dynamics program. It represents the state of the art in computer modeling.

27. ADVS is of the former type. It models a vehicle not as an assembly of real parts but as three lumped masses: a sprung mass (the part of the vehicle that rests on the springs), a front unsprung mass (the front suspension, including the springs) and a rear unsprung mass (the rear suspension, including the springs). *Id.*, p. 55. Rather than permitting the user to create a suspension that has the same parts and same characteristics as a real vehicle, ADVS compels the user to take prearranged parts and try to make them act like real parts. *Id.*, p. 55.

28. For all independent suspension systems, those in which the right and left wheels are not connected by a rigid axle, ADVS models them using an equivalent swing axle suspension system. The ADVS model assumes that each road wheel is connected to a single rigid arm. The single rigid arm pivots about a single point. Its movement is regulated by a single spring. Its movement is restricted by upper and lower bump stops. Bump stops are made of flexible material and cushion the blow when the swing arm comes in contact with the underbody of the vehicle. *Id.* The ADVS suspension model

only moves in two planes: up/down and left/right. It assumes that those planes pass directly through the center of the front wheel. *Id.* A diagram of this model is shown on page 57 of Defendants Exhibit D5.

29. The front suspension of the 1997 Rodeo is an independent suspension, but it does not use swing arms that pivot about single points. Rather, each wheel is affixed to the vehicle frame by an upper and a lower control arm. Each of the control arms is anchored to the frame by two hinged bushings. Although the front suspension of the Rodeo has upper bump stops, it has no lower bump stops. Downward wheel travel—travel away from the frame—is arrested by the control arms themselves. It does not have springs that compress and extend. It uses torsion bars that are anchored to one of the control arms and that twist one way when the wheel is pushed up and the other way when the wheel is allowed to push down. The front suspension of the Rodeo does not move in only two planes; it moves in three: up/down (z), left/right (y); and back/forth (x).

30. ADVS models all rear suspensions as a rigid member, solid axle. The ADVS axle pivots about a single hinge in the middle of the axle. It, too, has a spring on either side and upper and lower bump stops. A diagram of this model is shown on page 56 of Defendants' Exhibit D5.

31. The Rodeo's rear suspension has a rigid axle, but it does not pivot about a single hinge in its middle. It has no such hinge. Also, it has no lower bump stops. The axle stops moving downward when the springs and shock absorbers are fully extended.

32. In its original form, ADVS also had the following shortcomings

a. It had only two types of suspension models: the equivalent swing arm for

an independent suspension and a hinged rigid axle for a dependent suspension;

b. It did not include the phenomenon of suspension roll steer, the effect on the steering of the road wheels caused when the suspension and body roll or tilt in a turn;

c. It did not include the phenomenon of suspension steer or camber compliance, the changes in road wheel tilt angle and road wheel direction caused when the suspension is loaded or unloaded;

d. It did not include a steering system—there were no linkages from the road wheels to a steering wheel, indeed, there was no steering wheel at all;

e. It did not include steering system compliance, that which determines whether the vehicle has "tight" steering like a sports car or less responsive steering as in an older sedan or station wagon;

f. It did not include steering system freeplay, the "play" in a system which allows a driver to turn the steering wheel some distance before the system tightens and redirects the road wheels;

g. It did not include aligning torque compliance, the phenomenon that causes the wheels to straighten out when one lets one's hands off the steering wheel;

h. It did not include Ackerman steering effects—the changes in steering that result when a vehicle is put into a turn and loads the outside suspension and tires;

i. It did not include a braking system model—rather, the operator simply declares that he desires the vehicle to accelerate or decelerate at a particular rate, the so-called "Hand of God" reaching down and accelerating or decelerating the vehicle;

j. It did not include a model for modern anti-lock brake systems (ABS);

k. It did not include a tire overturning moment in its tire model, one of the essential factors in tire movement;

l. It did not include tire lag dynamics, the time it takes a tire to flex and then rebound as it is loaded in compression or in a turn; and

m. It used a non-standard model for aerodynamic influences on the vehicle.

Defendants' Exhibit D4, p. 5.

33. In order to get a program like ADVS to come anywhere close to simulating reality, one has to measure the vehicle being modeled and use assumptions about how it would behave if it were an equivalent swing arm suspension in the front and a hinged rigid axle suspension in the rear. One would adjust the features of the equivalent swing arm and the hinged axle and change their lengths in order to get it to move similarly to the 4-link upper and lower control arm front suspension and the sprung axle rear suspension. It is not possible for a model like ADVS to exactly duplicate real world performance because an equivalent swing axle cannot move exactly as a 4-link upper and lower control arm suspension will move. Similarly, a model without a steering or braking system will never steer or brake exactly as a real vehicle would because it lacks essential features.

34. By contrast, a modern multi-body dynamics program allows the user to create models of all these things. Each operative part can be created with exactly the same dimensions and masses as the real object. It can also be given the same freedom of movement that a real object has.

35. For a computer program to be considered reliable, it must be "validated." This means that it must be shown capable of faithfully and accurately modeling the way in which a real object would perform in the real world.

36. Dr. Nalecz asserts that his ADVS model has been validated. For support, he offers only his affidavit, Exhibit C to Plaintiffs' Nalecz Resistance, and the doctoral dissertation of Kenneth D'Entremont, who was one of Dr. Nalecz's students at UMC.

37. Dr. D'Entremont has testified in deposition that ADVS was not, in fact, validated. He testified that in order to make the simulated vehicle model follow the same path as a real vehicle, he and Dr. Nalecz had to adjust the steering angles of the model. *Defendants' Exhibit D66,* pp. 21-22. He also testified that Dr. Nalecz directed him to remove a section of his dissertation that was critical of ADVS and suggested the need for improvements in the way it modeled vehicle contact with sloped soil. *Id.*, pp. 29-30. Dr. D'Entremont related instances in which an ADVS vehicle model simply dropped through the modeled terrain as if the rug were suddenly pulled out from under it. *Id.*, pp. 23-24.

38. In a paper written in December 1994, Dr. Nalecz admitted that ADVS had at least some of the defects Dr. D'Entremont identified. Dr. Nalecz wrote that the program was unable to cause a modeled vehicle to follow the path of a real vehicle when the model was subjected to the same steering inputs. Dr. Nalecz admitted he had to

"adjust" the steering on the model to make it follow approximately the same path. *Defendants' Exhibit D15,* p. 20.

39. Defendants have made the Court aware of other papers written by Dr. Nalecz in which he claims to have "validated" his program. Yet those papers do not support that claim. They do not contain data showing that the ADVS vehicle model was subjected to the same inputs as the real test vehicle and that the former responded the same way as the latter.

40. Defendants have also made the Court aware of two inter-office memos written by Dr. Nalecz concerning his ADVS program. On October 22, 1992, he agreed with the criticisms of NHTSA representatives and others to the effect that ADVS is a poor program:

> [T]he ADVS simulation is quite inefficient and not useful in its current form.... A recent NHTSA report supports my analyses of both the simulation's shortcomings and the limited potential for future funding. In this situation, no one can make effective use of the simulation. This makes ADVS practically worthless.

Defendants' Exhibit D6. On February 26, 1993, he wrote:

> [N]either industry nor any federal agency would be willing to invest the money required for the much-needed extensive modifications and optimization of ADVS simulation to make this simulation much more powerful and effective. A copy of NHTSA report, which I have provided to you, supports my analyses of both the simulation's shortcomings and the limited potential for obtaining additional funding. In this situation, the ADVS is practically worthless since no one can make effective use of this simulation.

Defendants' Exhibit D448A. These memos were written concerning the same program that Dr. Nalecz claimed in his published papers to have been "validated" and that he

refers to in his report as the foundation upon which the current version is based.

41. Dr. Nalecz then offered to buy the rights to the program for $1000. *Defendants' Exhibit D6.* In return, UMC offered to license it to Dr. Nalecz for $35,000, subject to other conditions. *Defendants' Exhibit D448B.* Dr. Nalecz and UMC never came to agreement on a sale or a license. Dr. Nalecz claims he got the program from NHTSA and copyrighted it. *Plaintiffs' Nalecz Resistance, Exhibit C,* ¶ 15. However, defense inquiries of the United States Patent and Trademark Office have found that there are no such copyrights. *Defendants' Exhibits D76 & D77.* Dr. D'Entremont testified that he transferred the file from the UMC network to one of Dr. Nalecz's personal computers. *Defendants' Exhibit D66*, p. 47.

42. Apart from papers written by Dr. Nalecz or someone working for him, there are no peer reviewed or published papers that find ADVS to be an accurate program for modeling complex vehicle behavior in real world crashes on public roads.

43. There is no evidence that anyone other than Dr. Nalecz has used any version of ADVS to reconstruct crashes, to evaluate vehicle designs, to redesign vehicles, or to assess the performance of vehicles in complex real world limit maneuvers.

44. Although Dr. Nalecz claims to have "improved" ADVS and to have eliminated many of the shortcomings found in the first version, *Plaintiffs' Nalecz Resistance Exhibit C*, pp. 3 & 9, there is no evidence that the "improved" version has been validated.

45. There is no evidence that the "improved" version has been tested and found accurate, or that it has been submitted for peer review and withstood scrutiny.

Rather, the evidence shows that Dr. Nalecz has resisted efforts to expose his program to public scrutiny through the use of protective orders.

46. The version of ADVS that Dr. Nalecz used in this case was created solely for use in litigation. *See Daubert II,* 43 F.3d at 1316-17.

47. There is no evidence that anyone has ever purchased the current version or any other version of ADVS from Dr. Nalecz. In an attempt to show acceptance in the scientific community, Plaintiffs have submitted several letters. For example, there is a 1996 letter purporting to be from an employee of Ford Motor Company and Dr. Nalecz's reply. *Plaintiffs' Nalecz Resistance Exhibit F-1 & F2.* Plaintiffs highlight a portion of the alleged Ford employee's letter saying, "I really feel it is an excellent program which will help us a great deal in our rollover studies." That statement is hearsay and cannot be admitted. Fed. R. Evid. 802. Regardless, it is obvious from the letter that the alleged employee is discussing not ADVS, the program used in this case, but LVDS, a different program. It is also obvious that the alleged Ford employee's statements are based only upon what Dr. Nalecz told him in a "conversation over the phone" and that the alleged employee did not have any literature or brochures at the time he made his comments. Furthermore, there is no evidence that Ford or anyone else actually purchased the program or ever got the program to do a real evaluation of it. The remaining letters generally predate even the original version of ADVS. They also have nothing to do with the scientific validity of ADVS or the uses to which it is being put in this case. The Court cannot accept such letters as evidence of "acceptance within the scientific community" or genuine "peer review." That they have been offered as evidence of such demonstrates

the weakness of Plaintiffs' claims.

48. Plaintiffs have also submitted an affidavit from Wade Allen, the president of STI, the company Nalecz hired to do his measurements of a Rodeo. *Plaintiffs' Nalecz Resistance Exhibit I.* It comments on Dr. Nalecz's expertise as a scientist. Evidence of Dr. Nalecz's character as a good scientist is not admissible as proof that he exercised good science in this particular case. Fed. R. Evid. 404(a). His reputation for anything other than truthfulness is not admissible under these circumstances. Fed. R. Evid. 608. Mr. Allen's affidavit is silent on the question of truthfulness. It is also notably silent on the worth of ADVS. To the extent that the affidavit involves matters of expertise and value judgments on the work of any expert, it is inadmissible because Mr. Allen has not been disclosed as an expert in this case.

49. Apart from Dr. Nalecz's *ipse dixit*, there is no evidence that the "improved" version of ADVS is any more reliable than the original version.

Dr. Nalecz's Vehicle Models

50. In an attempt to create a mathematical ADVS model of a Rodeo, Dr. Nalecz had a company called STI make certain measurements of the Rodeo. STI used a parameter set for another program, VDANL. STI did not have a set of parameters for use in Dr. Nalecz's version of ADVS, in part because no such parameter set has ever been published. Many of the parameters that must be measured for ADVS are incapable of actually being measured. This is one of the flaws in the ADVS program. *Defendants' Exhibit D8*, p. 11.

51. STI did not even measure all of the values for the parameter set it had to

work with. Many of the values entered by STI are assumptions. *Defendants' Exhibit D19.*

52. For those values that STI did measure, it only exercised the suspension a very small amount and made measurements at that level. STI did not exercise the suspension through its full range of motion or even to levels that must have been experienced in a limit maneuver such as the Ramirez crash. Thus, there are no actual measurements of suspension performance beyond a very modest level. Dr. Nalecz has merely assumed how it would perform.

53. Dr. Nalecz has also moved the springs and pivot points of his front suspension in an attempt to make his ADVS equivalent swing arms behave like a 4-linkm upper and lower control arm suspension. He has made similar modifications to his hinged rigid axle ADVS rear suspension. In the process, he has made additional assumptions necessary to conform the VDANL parameter set to the ADVS parameter set. *Defendants' Exhibit D20.*

54. Thus, there are assumptions about the values of certain VDANL parameters, assumptions about the performance of the fully exercised suspension, and assumptions about the ADVS parameters. There is no evidence other than Dr. Nalecz's *ipse dixit* that these assumptions are correct and that they yield reliable results.

55. To develop his tire models, Dr. Nalecz did not measure the actual tires that were on this vehicle or their equivalents. Rather, Dr. Nalecz took measurements from the tires of an Isuzu Trooper. Those tires were of a different size, P245/70R16 instead of P225/75R16. *Defendants' Exhibit D8,* p. 10. He then "scaled" the results of the testing

of the Trooper tires in an attempt to approximate the performance of the Rodeo tires. *Id.*

56. There is no evidence that Dr. Nalecz or anyone else has "validated" Dr. Nalecz's assumptions or his scaling vis-à-vis tires.

57. There is no evidence that Dr. Nalecz has validated his model of the 1997 Rodeo or his "modified" 1997 Rodeo model. Thus, there is no evidence other than Dr. Nalecz's *ipse dixit* that the models faithfully and accurately mimic the responses of the real vehicle to real inputs.

58. Carr Engineering has taken steering and speed data from full scale tests run on an actual Rodeo by Dr. Michael Kaplan, one of Plaintiffs' other experts. If the program and the vehicle model are valid, then the model should follow the same path and perform in the same fashion as the real vehicle when subjected to the same inputs. Carr Engineering's analysis shows that Dr. Nalecz's Rodeo model does not do that. Rather, it rolls over whereas the actual vehicle remained on its tires throughout Dr. Kaplan's test.

59. Carr Engineering produced several runs wherein it applied the same inputs to the Nalecz program as real drivers apply to real vehicles. In case after case, there were obvious and severe differences between the way in which the modeled vehicle responded and the way in which the real vehicle responded.

60. Plaintiffs have admitted that ADVS was not intended or designed for use in designing or redesigning vehicles. *Plaintiffs' Nalecz Resistance Exhibit Q,* ¶ 5, *Exhibit C,* ¶10; *Plaintiffs' Nalecz Resistance*, p. 3, ¶ 11.

61. There is insufficient evidence that Dr. Nalecz's ADVS program and models are scientifically valid and reliable tools for accurately and faithfully predicting

how a real vehicle would respond to driver inputs.

Dr. Nalecz's Terrain Model

62. The pertinent stretch of Interstate 10 passes through the southern New Mexico desert. It is a two lane highway separated by a soil median. The median is irregular, with dips and rises and falls. Near the point at which the vehicle left the roadway, the median slopes down to a culvert that passes under the east and west-bound lanes so that water can flow through in rainy times. The median is comprised of soft soil, rock and grass. *Defendants' Exhibit D18.*

63. In his terrain model, Dr. Nalecz has not duplicated the conditions of the road or the median. Rather, he has assumed that the site is composed of a series of flat planes that are precisely parallel to one another. *See, Defendants' Exhibit No. D17.* The road surface is modeled as a perfectly flat, perfectly consistent pavement with a skid number of 95. *Defendants' Exhibit D7*, p. 263. Dr. Nalecz did not actually measure the skid number of that pavement. *Id.*, p. 264. There is evidence that the road surface is not perfectly flat but is crowned.

64. For the paved shoulder, Dr. Nalecz has assumed that it consists of two flat planes that are exactly 42 inches and 28 inches wide respectively. *Defendants' Exhibit D17.* The first plane, adjacent to the roadway, is constantly at an angle of 0.8 degrees. *Id.* The second plane, adjacent to the first, is constantly at an angle of 14 degrees. *Id.* Dr. Nalecz measured the shoulder at one point to arrive at those figures. He then assumed that the shoulder was exactly that width and sloped at exactly that same angle throughout the crash site. There is no evidence that this is the actual condition of the shoulder

throughout the roughly 300 relevant feet running west to east through the crash site. *See, Defendants' Exhibit D18.*

65. For the median, Dr. Nalecz has assumed that the median is constructed of two flat planes on the southern side, next to the paved shoulder. Each of these planes is infinitely long and perfectly consistent throughout. *Id.* Each is also perfectly flat from west to east. *Id.* One of those planes is exactly 34 feet wide; the other is exactly 20 feet 6 inches wide. *Id.* They are angled at 7 and 0 degrees respectively. *Id.*

66. Dr. Nalecz has also assumed that each of these planes is perfectly level throughout the roughly 300 feet of the crash site. *Id.* He has also assumed that each plane has an identical and perfectly consistent composition. In other words, he has assumed that there are no rocks, that there is no grass and that there are no changes or irregularities in consistency or elevation throughout the length and breadth of each plane. *Id.*

67. The evidence shows that the actual median does not consist of such perfectly smooth, perfectly angled and perfectly consistent planes. *See, e.g., Defendants' Exhibits D18.*

68. Dr. Nalecz has also assumed that the soil is the consistency of a type of sand called Lete Sand. *Defendants' Exhibit D8*, p. 6. He has also assumed that it is of the consistency of the sixth type of Lete Sand found in a table in works by Bekker and Wong. *Defendants' Exhibit D8.* There is no evidence that Dr. Nalecz's assumption is based upon any measurements or analyses of the qualities of the soil in the median at the crash site.

69. Defendants have had the soil analyzed. That analysis shows that the soil does not have the properties of Lete Sand 6. Of all the soil types identified by Bekker and Wong, it most closely resembles North Gower Clayey Loam. *Id.*, p. 6. However, it does not even resemble that type of soil very much. There are marked differences in its compression and shearing characteristics. Furthermore, Bekker and Wong's analyses have been discredited and are no longer accepted in the scientific community. *Id.*, pp. 4-9. These flaws are important where, as here, there were admittedly a number of interactions between the tires of the Rodeo and the soil of the median, from the first time the Rodeo was sent into the median until the vehicle was flipped into the air. *Defendants' Exhibit D17.*

70. In addition, Dr. Nałecz has modeled the tires of the Rodeo as rigid discs when they interact with the soil. His tire models do not gradually sink into the soil; they instantaneously drop in to a predefined depth. Tires are not rigid discs and they do not drop instantaneously into soil. *Defendants' Exhibit D8*, pp. 4-9.

71. There is no evidence that anyone other than Dr. Nalecz uses this type of soil modeling in computer simulations. There is no evidence that his methods have been subjected to peer review and withstood scrutiny. There is no evidence that his methods have been tested and found reliable. There is no evidence that they have been accepted in the scientific community. There is evidence that they have a considerable amount of error. There is also evidence that his assumptions and methodology do not fit the actual facts of this case.

72. Assumptions about pavement consistency and skid numbers are common

in routine accident reconstruction where an expert plots an approximate path and uses standard calculations to arrive at a range for the speed at which a vehicle was traveling. However, Dr. Nalecz is not performing a routine accident reconstruction. Rather, he is using his ADVS program to create simulations that purport to show the Rodeo's precise speed, down to a tenth of a mile per hour. *Defendants' Exhibit D25*, p. 4. He is also using that program to form opinions concerning precisely what things the driver did with the steering wheel, accelerator pedal and brake pedal and when he did them. On top of all that, he is using his program to "redesign" a vehicle and to create a substitute vehicle that, according to Dr. Nalecz, would have led to a different result. Because very small changes in speed, steering input, terrain features and vehicle location can have dramatic effects upon the ultimate outcome, a higher level of precision is required for this type of reconstruction and the simulations that accompany it. And although Dr. Nalecz claims that he substantiated some of his work using basic accident reconstruction equations, his opinions about what the driver did and when he did it and what would have happened had other terrains or other vehicles been in use are opinions that derive entirely from ADVS.

73. There is insufficient evidence that Dr. Nalecz's methodology of modeling the terrain of the crash site is scientifically valid.

74. There is insufficient evidence that Dr. Nalecz's methodology fits the facts of this case.

Dr. Nalecz's Driver Inputs for the Ramirez Crash

75. Using his ADVS program, Dr. Nalecz has created a simulation of the Ramirez vehicle and the crash site. Through a series of runs or iterations, Dr. Nalecz has

adjusted the speed of the simulated vehicle, its original position and the driver's control inputs (steering, acceleration and braking) to try to make the simulated Rodeo follow the same path that Dr. Nalecz believes the actual vehicle followed. *Defendants' Exhibit D25*, pp. 3-5.

76. From this process, it is obvious that very slight differences in simulation inputs will affect the path and orientation of the simulated vehicle. By the same token, very slight differences in the configuration of the simulated vehicle and simulated terrain will affect the path and orientation of the simulated vehicle. It is also obvious that these inputs are mutually dependent. For example, if the initial vehicle speed is changed, then the subsequent steering and braking inputs would have to be changed to make the simulated vehicle follow the same path as the actual vehicle. Because of this interdependence, slight errors get magnified as the simulation proceeds. This is similar to an error in a marksman's aim. An error in a mere fraction of a degree laterally or vertically can make the difference between a bulls eye and a clean miss. Failure to accurately account for wind force and direction and the speed and direction of a bird's flight can mean the difference between bagging the bird and missing it entirely.

77. Through his methodologies, Dr. Nalecz has formed the opinions that:

a. Denny Ramirez was driving at 82.1 miles per hour when he allowed the Rodeo to drift from the left-most (No. 1) travel lane into the median;

b. Exactly 1.4 seconds later, Mr. Ramirez turned the steering wheel 35 degrees to the right;

c. Exactly 2.0 seconds later, Mr. Ramirez then turned the steering wheel 115

degrees to the left of center (for a total reverse steer of 150 degrees[1]) and held it rigidly fixed at that point;

d. Exactly 0.78 seconds later, Mr. Ramirez eased his left steer from 115 degrees to 63 degrees and held it rigidly fixed; and

e. Exactly 0.20 seconds later, Mr. Ramirez turned the steering wheel 172 degrees to the right (for a total right steer of 235 degrees[2]).

Defendants' Exhibit D25; Defendants' Exhibits D21 & D22.

78. The only basis for these opinions is the ADVS program. Essentially, Dr. Nalecz's opinion is that this is what actually happened because these inputs make his ADVS models follow the same path he thinks the Ramirez Rodeo followed. *Defendants' Exhibit D25* pp. 3-5.

79. There is no evidence, however, that there is only one set of inputs that can cause the modeled Rodeo or the actual Rodeo to follow this path. Rather, the evidence is that there are many combinations of inputs that can achieve approximately the same result.

80. Each of these conclusions is interdependent. If the speed is increased, then a different set of steering and braking inputs would be needed to make the simulated model follow the path. If one steering input is changed, then other inputs would have to be changed. If the parameters of the vehicle model are changed, then other changes would be needed in speed and control inputs to have the vehicle follow the path.

81. The evidence also fails to show that the modeled vehicle behaved

[1] 35 degrees back to center + 115 degrees to the left of center = 150 degrees.

precisely as did the actual vehicle. For example, tire loads on the actual vehicle are unknown, yet important in causing rollover. Road wheel angles are unknown but just as important.

82. This is important because Dr. Nalecz takes the opinions he has formed about the driver's speed and steering inputs and then formed the opinion that the driver's inputs were reasonable and appropriate. If his methodology for forming the opinions about driver inputs are not scientifically valid, then his opinions about the reasonableness of those inputs are not scientifically valid.

83. Regardless of the methodology used, the reasoning behind the opinion that the driver's inputs were reasonable and appropriate is not scientifically valid, nor does it fit the facts. Under New Mexico law, a driver has a duty to operate his vehicle at or below the speed limit. N.M.S.A. 66-7-104 (2000). The speed limit on this highway was 75 m.p.h. at the time of the crash. *Defendants' Exhibit D1*. A speed of 82.1 m.p.h. is *prima facie* unreasonable and constitutes negligence. *Id.*, N.M.U.J.I. 13-1202. Furthermore, under New Mexico law, a driver has a duty to keep his vehicle on the road and to keep his vehicle under proper control. *Id.* By taking the Rodeo off the pavement and into the median not once but twice, and by putting the Rodeo into a spinning slide across two lanes of traffic and back again, sliding broadside off the road, the driver's conduct was *prima facie* unreasonable. The Court cannot accept that this conduct was reasonable because New Mexico law forbids it. Furthermore, the Court endorse as scientifically valid the reasoning that it is appropriate for a driver at 80+ m.p.h. to turn the

[2] 63 degrees from left to center + 172 degrees right = 235 degrees.

steering wheel right 35 degrees and then 150 degrees back to the left. *Defendants' Exhibit D25*, p. 4.

84. Real drivers cannot and do not steer as Dr. Nalecz has assumed the Ramirez Rodeo driver steered in this case. The steering profile Dr. Nalecz assumes for this crash is shown in a chart as Defendants' Exhibit D21. Human beings cannot turn the steering wheel at a precise and consistent steering rate from the start of a steering wheel turn to the end. The steering rate begins at zero, then climbs to a peak, then returns to zero. (Even that assumes that a driver can keep a steering wheel completely still). Yet Dr. Nalecz assumes that the steering rate instantaneously goes from zero to a certain number of degrees per second and then goes instantaneously to zero. Human arms do not work that way.

85. The Court also finds that human feet do not push brake pedals the way Dr. Nalecz assumes they were pushed in this case. Defendants' Exhibit D22 is a chart showing Dr. Nalecz's deceleration profile for his assumed Ramirez crash. Human feet cannot and do not push brake pedals in the way Dr. Nalecz has assumed. Furthermore, vehicle brake systems and vehicle tires cannot and do not create decelerations instantaneously as Dr. Nalecz has assumed.

86. Dr. Nalecz's assumptions about steering and braking defy the laws of physics.

87. In addition, Dr. Nalecz's assumptions about steering and braking are not consistent with the testimony of Mr. Ramirez, the purported driver. Mr. Ramirez testified in his deposition that he turned the steering wheel to the right, to the left, back to the right

and left again. *Defendants' Exhibit D2*, pp. 113-14. He said he never turned the steering wheel more than about 30-45 degrees in either direction. *Id.*, pp. 99-114. Yet Dr. Nalecz has Mr. Ramirez steering right, left and then right. As for braking, Mr. Ramirez testified that he merely tapped the brakes "gently." *Id.*, pp. 100-11. Yet Dr. Nalecz has Mr. Ramirez slamming on the brakes three times, something Mr. Ramirez denies doing.

88. Furthermore, the timing of the braking inputs is unnatural. The inputs are also timed so that they cause deceleration spikes that lead to rollover. Brake spikes in hard cornering are a well known way to tip up vehicles. *Defendants' Exhibit D24*, pp. 22-23 & 25-28. When the braking spikes are removed, the Rodeo model does not roll over if the pavement is extended and the median removed.

89. There is insufficient evidence that Dr. Nalecz's reasoning about driver inputs and the initial conditions of the crash sequence fits the facts of this case.

90. There is insufficient evidence that Dr. Nalecz's methodology of forming opinions about driver inputs and initial conditions is scientifically valid.

Dr. Nalecz's Models of the "Modified" Rodeo and the 1996 4Runner

91. In an attempt to demonstrate that the Ramirez family would not have met tragedy in a different vehicle, Dr. Nalecz has used ADVS to create models of a "modified" 1997 Rodeo and a 1996 4Runner.

92. To create the "modified" 1997 Rodeo model, Dr. Nalecz altered the parameters of his original 1997 Rodeo model to lower the height of the center of gravity, widen the track width and move the center of gravity backward about 10 inches.

93. It is not possible to do this in a real vehicle. The center of gravity location

is not a fixed value decided upon by engineers. Rather, it is the product of the vehicle's construction. Once a vehicle has been assembled with all its parts, the center of gravity is found in a particular location. One cannot merely move the center of gravity of a vehicle. One must move parts and the result is that the cg moves.

94. It is apparent that Dr. Nalecz made his decisions about how to modify the vehicle so that it would not roll over in this particular crash. Yet engineers do not and cannot design vehicles for the particular set of circumstances that existed on Interstate 10 at the 18th mile marker east-bound on August 8, 1997 with the Ramirez family and their luggage.

95. It is also apparent that Dr. Nalecz selected the 1996 4Runner as an alternative design simply because he had created such a model before in another case on which he worked against Toyota. There is no evidence that the Ramirez family was in the market for a 1996 4Runner or that it would have purchased one.

96. Thus, the essence of Dr. Nalecz's opinions in this regard is that there was a way in which Isuzu could have designed the Rodeo so that it would not have rolled over on August 8, 1997.

97. But Dr. Nalecz did not use the same steering and braking profiles on the "modified" 1997 Rodeo model or the 1996 4Runner model. He used different profiles for each. His reasoning was that this was necessary to make the other vehicles follow the same path as the 1997 Rodeo. But there is no reason to believe that the driver of the Rodeo was consciously choosing the path he took. If he was, then presumably he would have chosen the path that kept him on the road, rather than driving into the median.

98. Furthermore, the other models do not, in fact, follow the same path. While their centers of gravity may follow approximately the same path, their tires do not. The 1997 Rodeo was put into a broadslide slide, but Dr. Nalecz has the "modified" model and the 1996 4Runner model going into the median straight. Thus, Dr. Nalecz has them oriented in a way that they could not possibly roll over.

99. In any case, there is insufficient evidence that either Dr. Nalecz's "modified" 1997 Rodeo or his 1996 4Runner model has been validated, especially in multi-input limit maneuvers on and off pavement.

100. The mere fact that Dr. Nalecz is able to create models that, driven differently, would have led to some different result sheds no light on any issue before this Court.

101. There is insufficient evidence that Dr. Nalecz's reasoning behind his selection of alternative vehicles, his choices for their steering and braking inputs and his conclusions about Isuzu's level of care based on these simulations is scientifically valid or that it fits this case.

102. There is insufficient evidence that his methodologies in this regard are scientifically valid.

Dr. Nalecz's Modified Terrain Simulation

103. In an attempt to show that the rollover in this case was initiated on pavement, Dr. Nalecz claims to have removed the soil median and extended the pavement. He claims that his Rodeo model still rolls over in his simulation and that this is proof that the rollover initiated on the pavement. *Defendants' Exhibit D25*, pp. 4-5.

104. However, Dr. Nalecz did not remove the entire median. He still has the Rodeo going off the pavement and into the median in its initial excursion, before the driver brought it back onto the road. Defendants have introduced evidence that this initial excursion destabilized the vehicle and that this is the cause of the subsequent rollover in Dr. Nalecz's simulation. Defendants have shown that, if the entire median is removed, there is no rollover even in the simulation.

105. Regardless, Dr. Nalecz's modified terrain simulation misses the point. No one contends that the median was not there or that it could have been magically removed a split second before the Rodeo was slid into it. The existence of the median is a fact. Imagining what might have happened had it not been there gives no useful information about either the facts of the crash, duties of care or proximate cause. The fact remains that the vehicle was driven toward the median in a broadside slide and there is no evidence that the outcome would have been different had the sliding vehicle been "modified" or some other vehicle.

106. There is insufficient evidence that Dr. Nalecz's reasoning in this regard fits the facts of this case or is scientifically valid.

107. There is insufficient evidence that Dr. Nalecz's methodologies in this regard are scientifically valid.

Dr. Kaplan and His Standard

108. Michael Kaplan is Plaintiffs' other liability expert. He is a mechanical engineer. He has never designed a vehicle. He has never tested a vehicle outside of the litigation arena. He has never written any peer reviewed papers in the field of motor

vehicle dynamics. For about the past 20 years, he has been employed as a consultant to lawyers bringing product liability claims against automobile manufacturers.

109. Dr. Kaplan has taken a 1997 Isuzu Rodeo and run it through a series of "tests." On some of the runs, the 1997 Rodeo was tipped up onto two wheels. He has also run a "modified" 1997 Rodeo—one with lower profile tires and with an extended track width—and a 1996 Toyota 4Runner through a series of "tests." Those vehicles were not tipped up onto two wheels. Based on this, Dr. Kaplan has concluded that the 1997 Rodeo is defective. He attributes the defect to what he terms a "low static stability factor" or T/2h. *Defendants' Exhibit D27*, p. 4.

110. According to Dr. Kaplan and Plaintiffs, it should be impossible to roll over a motor vehicle on the road under any circumstances. *Id.*, p. 6. Dr. Kaplan writes that such circumstances would include skidding "from contact with another vehicle," skidding from "hard braking in a turn," when a driver puts in "whatever steer he or she senses is necessary" to avoid a crash, "where the driver is attempting to regain control (often unsuccessfully) following an tire detreading or blowing out, after rear end slippage on ice, snow, gravel, or oil, and after drifting into the median and re-entering the roadway," and "where there is loss of control following mechanical failure of a vehicle component." *Id.*, p. 6. Thus, no matter the "spectrum of environments" a vehicle is driven in "by drivers with varying skills, temperaments, training, and experience," the vehicle must never be rolled over. *Id.* No matter how fast the driver goes, no matter how wildly he weaves in and out of traffic, no matter how drunk he is, the vehicle must remain stable or it is defective.

111. Dr. Kaplan and Plaintiffs cite no standard, regulation or peer reviewed paper for the propositions that this is a reasonable standard or that it is even achievable. Instead, they point to portions of two documents from the Ford Motor Company. The first is a comment submitted by Ford in response to a 1973 NHTSA announcement. NHTSA was thinking of enacting a Federal Motor Vehicle Safety Standard ("FMVSS") for rollover resistance that would reduce the incidents of rollover "on smooth, dry pavement." *Defendants' Exhibit D80.* NHTSA asked for suggestions and comments on its proposal. *Id.* In its submission, Ford engaged in a general discussion, an overview, of design goals for different types of vehicles. Commenting on passenger cars, Ford said that they should be "'forgiving' of all manner of 'unskilled' driver situations that precipitate wild, panic motivated, evasive maneuvers of drivers of widely varying abilities. " *Defendants' Exhibit D79*, p. 3. This is the comment on which Dr. Kaplan and Plaintiffs rely for their "no rollover" standard. However, later in the same document, Ford contrasts passenger cars and utility vehicles or multi-purpose passenger vehicles ("SUVs"), writing, "Trucks, buses and multipurpose passenger vehicles often exhibit load conditions with much higher centers of gravity than passenger cars. Under these high load conditions, a light truck or a multi-purpose passenger vehicle may, in certain cases, exhibit less resistance to rollover." *Id.* Appendix A also notes, "Ford has estimated that about one-fourth of passenger car occupant fatalities result from events in which vehicles have overturned," and that something less than 50% of those overturned on the road. *Id.*, Appendix A, p. 1. The phenomenon of "on-the-road, single car, non-collision rollover" was expressly acknowledged by Ford, although discounted as a

problem that needed fixing. *Id.* And when the entire document is put in the context in which it was created, it becomes apparent that the document does not mean what Dr. Kaplan and Plaintiffs say it means. NHTSA was searching for a series of dynamic tests that could be used to establish a standard to reduce the risk of on-road rollover. *Defendants' Exhibit D79.* It ultimately abandoned that effort, only to undertake it again in 1997. *Defendants' Exhibit D105.* If it had truly been Ford's design standard to make vehicles rollover proof and Ford had succeeded at that, then surely Ford would have shown NHTSA how it could be done and NHTSA would have enacted a standard based on Ford's methods.

112. The second document is a snippet of congressional testimony by Helen Petrauskas, then an official of the Ford Motor Company. She testified, "The objective of [Ford's design guidelines] is to design and develop a vehicle that will remain stable under all operating conditions." *Defendants' Exhibit D105.* Dr. Kaplan and Plaintiffs argue that this also establishes that Ford has a "no rollover" design standard. Yet there is a significant difference between an aspiration or goal and an acceptability standard. In fact, there is nothing in the Ford design guidelines that says that a vehicle must be impossible to roll over. *Defendants' Exhibit D312.* If Dr. Kaplan's and Plaintiffs' interpretation were correct, then Ford would have an acceptability standard to the effect that none of its vehicles should ever become unstable, either in roll stability or directional stability, under any possible condition. That would mean that no Ford vehicle could be rolled over or slid out or spun out, for sliding and spinning are manifestations of a loss of directional stability. There is also a difference between "operating conditions" and "out

of control conditions." If a vehicle is being operated, it is in control. If a vehicle is out of control, then it is not being "operated" and cannot be in an operational condition. When one puts the excerpt in the context in which it was given—a congressional hearing about rollovers of Ford vehicles—it becomes obvious that the excerpt does not mean what Dr. Kaplan and Plaintiffs say it means. This is underscored by the fact that Dr. Kaplan has testified against Ford many times over the rollovers of Ford vehicles.

113. Plaintiffs also cite a judicial opinion from California to support their claim. The opinion is unpublished and may not be cited under California rules. *Faitz v. Rugge*, 114 Cal. App. 3d 967, 171 Cal. Rptr. 149 (1981); C.R.C. 977(a) and (b). Regardless of that, the opinion merely holds that there was sufficient evidence before that court for that jury to do what it did. If published, it might have stood for some principle of law, but it stands for no principle of science. Principles of science are written by scientists, not courts.

114. Standards are not to be found in excerpts from NHTSA submissions and snippets of congressional testimony. Standards are found in written protocols that are articulated so that the engineers charged with building the vehicle can comply with the standard. Plaintiffs have put forward no evidence of such a standard.

115. Indeed, the Court has been presented with evidence that there is no such standard and that such a standard seems unachievable. Since September 1, 1984, every SUV under 10,000 lbs. has carried warnings in its owners manual and on its driver side sun visor to the effect that the driver should avoid sharp turns or abrupt maneuvers lest vehicle be put out of control, roll over and crash. *Defendants' Exhibits D84, D85 &*

D769. In addition, NHTSA has been studying tests that might be apt for the basis of an FMVSS on dynamic rollover resistance. *Defendants' Exhibit D345.* Furthermore, NHTSA enacted a final rule effective January 12, 2001 that calls for rating the rollover risk of vehicles. *Defendants' Exhibit D105.* Nowhere does NHTSA say that any vehicles are rollover proof. The highest rating, 5 stars, is given to vehicles that still pose a 10% risk of rollover in crashes. *Id.*, p. 3404. That means that such vehicles will roll over in 1 out of every 10 crashes. In fact, NHTSA explicitly states: "*Remember: Even the highest rated vehicle can roll over, but you can reduce your chance of being killed in a rollover by about 75% just by wearing your seat belt.*" *Id.*

116. If the "no rollover" standard were an actual, achievable industry standard, then there would have been no need for NHTSA to search for ways of merely reducing rollovers.

117. There is insufficient evidence that the "no rollover" standard of Dr. Kaplan and Plaintiffs is scientifically valid.

Dr. Kaplan and His "Tests"

118. Dr. Kaplan used three types of tests in an attempt to show that the 1997 Rodeo does not meet his standard and is defective. They are the Hooker/Kaplan or MSAI Emergency Avoidance Maneuver, a J-turn and a variation of the Toyota Fishook test.

119. Because the "no rollover" standard is used to judge acceptability under these tests and because the validity of a test depends upon the validity of its acceptance criteria, there is insufficient evidence that any of these tests, as Dr. Kaplan runs and interprets them, is scientifically valid.

120. Leaving aside, for purposes of discussion, the validity of the "no rollover" acceptance criterion, the Court still concludes that there is insufficient evidence that these tests, as Dr. Kaplan runs them and interprets them, are scientifically valid.

121. There is no written protocol for any of these tests, as Dr. Kaplan runs them and interprets them. For example, there is no set number of times that the tests are to be run. In at least one of each of the tests, the 1997 Rodeo was not tipped up. Had Dr. Kaplan stopped testing there, he would have concluded that the vehicle was stable. Yet, he kept doing runs until he got tip-up. He then took his comparison vehicles, ran them at the same speeds at which he got tip-up in the 1997 Rodeo, and then stopped. Although this may show that, for those particular test conditions (speed, steering magnitude, steering rate, steering timing, temperature, surface condition, load, tire condition, tire pressure, etc.) the comparison vehicle was not tipped up, that does not support the conclusion that the comparison vehicles would not have tipped up under different conditions, such as the conditions on Interstate 10 at 80+ m.p.h. Indeed, on none of the vehicles did Dr. Kaplan use speeds as high as that used by the driver of the Ramirez Rodeo, nor did he use steering and braking inputs such as those used by the driver of the Ramirez Rodeo at that speed.

122. The evidence shows that each of these tests can be and has been used to tip up a variety of vehicles. *Defendants' Exhibit D79.* Indeed, the Toyota Fishook test is designed to do exactly that: tip up a vehicle and arrive at a value for lateral acceleration for rollover ("LAR"). *Defendants' Exhibit D38 & 39.*

123. The evidence also shows that vehicles are sensitive to each of the variables

listed in Paragraph 121 and others. In each of the tests, to some degree, it is possible for a driver to adjust the timing of his inputs, the rates of his inputs, the magnitude of his inputs and the duration of his inputs to affect the outcome of the test. As NHTSA noted in reference to the Consumers Union Short Course Maneuver, a maneuver that is much more constricted than the pathless and course-less Hooker/Kaplan EAM, "Using the same procedures, probably any light utility vehicle could be made to roll over under the right conditions and driver input." *Defendants' Exhibit D28*. In 1996, NHTSA reached the same conclusion commenting upon driving done by Consumers Union. "CU short course test results are sensitive to handwheel [steering wheel] inputs and vehicle paths through the course. At various speeds, the test driver can cause the subject vehicle to go through the CU short course without knocking down cones and without wheel lift or the test driver can cause the vehicle to tip up on two wheels." *Defendants' Exhibit D102*, p. 45. NHTSA also noted that "tests performed by CU drivers on the CU short course demonstrates that the test can be and has been conducted with a variety of strategies, including timing of turns, severity of steering inputs, and rate of steering inputs, which can lead to different results under similar initial conditions." *Defendants' Exhibit D34*, p. 33, ¶ 5. NHTSA concluded that "the CU short course test, as conducted by CU, does not provide a sufficient scientific basis on which to determine the existence of a safety related defect." *Id.*, p. 33.

124. Dr. Kaplan's own records show that there are variables that are undetectable that can make the difference between stability and rollover even at the same nominal speeds and driver inputs. For example, in J-turns at 40 m.p.h., he achieved tip-

up on one run but no tip-up on another. *Defendants' Exhibits D35 & D1197.* There was similar variability in his other tests. *Defendants' Exhibits D36 & D1193-D1198.*

125. There is insufficient evidence that anyone in the scientific community runs these tests to Dr. Kaplan's same acceptance criteria or in the same way as Dr. Kaplan. There is evidence that other consultants to plaintiffs' lawyers use them in litigation, but no evidence that they are so run and interpreted outside of litigation against vehicle manufacturers. In fact, the evidence is that NHTSA and Toyota have achieved tip-ups in J-turn type tests and in fishook type tests and that neither has found the tipped up vehicle to be defective. *Defendants' Exhibits D29, 38, 39 & 345.* In fact, Toyota has found that its vehicles perform well if they tip up at or near the same levels of lateral acceleration as the competition. *Defendants' Exhibit D39.*

126. There is no evidence that the results of these tests can be correlated with the real world performance or safety of a vehicle.

127. There is no evidence that the results of these tests can be correlated with any particular static stability factor or T/2h.

128. There is no evidence that these tests have been peer reviewed and accepted for the purposes and in the manner applied by Dr. Kaplan.

129. There is no evidence that these tests have been accepted in the scientific community for the purposes and in the manner applied by Dr. Kaplan.

130. The error rate of these tests is demonstrably high.

131. There is insufficient evidence that these tests are scientifically valid for the purposes and in the manner applied by Dr. Kaplan.

132. There is insufficient evidence that these tests fit the facts of this case. Specifically, there is no evidence that the Ramirez vehicle's driver was confronted with an obstacle in his path while in a raceway parking lot. There is no evidence that the Ramirez driver input 360 degrees and held it while on a skid pad or in a raceway parking lot. There is no evidence that the Ramirez driver input steering to the left and right as in the fishook maneuver while in a raceway parking lot. Because Dr. Kaplan suggests that the comparison vehicles would not have rolled over under the circumstances of the Ramirez crash, these tests of the comparison vehicles have to fit the circumstances of the Ramirez crash. They do not.

133. Finally, there is insufficient evidence that Dr. Kaplan possesses and exercises the scientific rigor and method that experts must have for their opinions to be admissible under Fed. R. Evid. 702.

Summary Judgment

134. Because each of the opinions of Plaintiffs' experts relating to liability is inadmissible, the experts should not be allowed to testify concerning them. Defendants' *Daubert* motions should be granted.

135. Because the deadline for designating experts has passed and Plaintiffs now have no liability experts, Plaintiffs cannot meet their burden of proof under either their negligence or strict products liability causes of action.

136. Defendants' Motion for Summary Judgment should be granted.

137. Plaintiffs concede that SIA was not negligent in the assembly of the vehicle. SIA does not bear the burdens of care that Plaintiffs would impose upon a mere

assembler and seller. Therefore, SIA's Motion for Partial Summary Judgment should be granted.

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CERTIFICATE OF SERVICE

I certify that a true copy of this document was served on Steven J. Crowley, CROWLEY, BUNGER & POTHITAKIS, 320 No. 3rd St., 6th Floor, P.O. Box 945, Burlington, IA, 52601 and Carmen Garza, GARZA LAW FIRM, 637 North Alameda Boulevard, Las Cruces, NM 88005, via hand-delivery and first-class mail, postage prepaid, on July 9th, 2001.

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